

CLAIM

1. An apparatus for preparing a fluid for a medical procedure by mixing of at least one medicament in the form of powder with water, the medicament being held in a vessel which defines a bottom, a side wall, and a top opening which is closed by an membrane for sealing the inside of the vessel; the apparatus comprising:

a source of water;

an opener for opening the membrane of the vessel, the opener including a holder for vertically holding the vessel to downwardly orient the opening;

a cutter, provided beneath the opening of the vessel held by the holder, for partially cutting the membrane along the periphery of the opening;

a mechanism for vertically moving the holder toward the cutter so that the cutting edge of the cutter pierces and partially separates the membrane from the periphery of the opening whereby the medicament in the vessel falls from the vessel;

a receiving member, in the form of a mesh provided beneath the cutter, for receiving all of the medicament from the vessel; and

a nozzle for directing water from the source of water in the form of a spray to the medicament received by the receiving member to dissolve the medicament into the water directed to the medicament; and

a tank for receiving and containing the substances dissolved in the sprayed water.

2. An apparatus according to claim 1, wherein the tank is adapted to receive the water from the water source; and

the apparatus further comprising a circulating system for supplying the water from the tank to the nozzle.

3. An apparatus according to claim 1 wherein the opener further comprises a housing for enclosing the cutter and the receiving member, the holder being vertically displaceable relative to the housing, and the
5 nozzle is attached to the housing to direct the water to the medicament received by the receiving member from outside of the housing.

4. An apparatus according to claim 1 wherein the
10 mesh size of the receiving member is of at least 20 μm , preferably 50 - 150 μm .

5. An apparatus according to claim 1, wherein the mechanism comprises a feed screw vertically supported for
15 rotation;
a motor, connected to one end of the feed screw, for rotating the screw;
a nut engaging the feed screw; and
a member connected between the nut and the
20 holder.

6. An apparatus according to claim 1, wherein the cutting edge includes a serrated portion provided along the inclined end.
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7. An apparatus according to claim 6, wherein the serrated portion is partially provided along the inclined end of the cutter body.

8. An apparatus according to claim 7, wherein the serrated portion is disposed on the proximal half of the inclined end.
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9. An apparatus according to claim 6, wherein the serrated portion is provided all around the inclined end
35 of the cutter body.

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10. An opener for opening the membrane of a vessel which contains at least one medicament in the form of powder and defines a bottom, a side wall, and a top opening which is closed by an membrane for sealing the inside of the vessel after the vessel receives a predetermined amount of the medicament, the opener comprising:

a holder for vertically holding the vessel to downwardly orient the opening;

a cutter, provided beneath the opening of the vessel held by the holder, for partially cutting the membrane along the periphery of the opening;

a mechanism for vertically moving the holder toward the cutter so that the cutting edge of the cutter pierces and partially separates the membrane from the periphery of the opening whereby the medicament in the vessel falls from the vessel;

a receiving member, in the form of a mesh provided beneath the cutter, for receiving all amount of the medicament from the vessel; and

a nozzle for directing water in the form of a spray to the medicament received by the receiver member to dissolve the medicament into the water directed to the medicament.

11. An opener according to claim 10 further comprising a housing for enclosing the cutter and the receiving member, the holder being vertically displaceable relative to the housing, and the nozzle being attached to the housing to direct the water to the medicament received by the receiving member from outside of the housing.

12. An apparatus according to claim 10 wherein the mesh size of the receiving member is of at least 20 μ m,

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a slit extending from the inclined end into the cutter body.

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17. A cutter according to claim 16, wherein the serrated portion is disposed on the proximal half of the inclined end.

18. A cutter according to claim 15, wherein the serrated portion is provided all around the inclined end of the cutter body.

- 5 19. An apparatus for preparing a fluid for a medical procedure by mixing of first and second medicaments with water, the first and second medicaments being held in first and second vessels each of which defines a bottom, a side wall, and a top opening which is
- 10 closed by an membrane for sealing the inside of the vessel; the apparatus comprising:
- a source of water;
- a first opener for opening the membrane of the first vessel, the first opener including a holder for
- 15 vertically holding the first vessel to downwardly orient the opening;
- a cutter, provided beneath the opening of the first vessel held by the holder, for partially cutting the membrane along the periphery of the opening;
- 20 a mechanism for vertically moving the holder toward the cutter so that the cutting edge of the cutter pierces and partially separates the membrane from the periphery of the opening whereby the medicament in the vessel falls from the vessel;
- 25 a receiving member, in the form of a mesh provided beneath the cutter, for receiving all amount of the medicament from the first vessel; and
- a nozzle for directing water from the source of water in the form of a spray to the first
- 30 medicament received by the receiving member to dissolve the first medicament into the water directed to the medicament;
- a second opener for opening the membrane of the second vessel, the first opener including a holder
- 35 for vertically holding the second vessel to downwardly orient the opening;
- a cutter, provided beneath the opening of

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the second vessel held by the holder, for partially cutting the membrane along the periphery of the opening;

5 a mechanism for vertically moving the holder toward the cutter so that the cutting edge of the cutter pierces and partially separates the membrane from the periphery of the opening whereby the second medicament in the vessel falls from the vessel; and

10 a nozzle for directing water from the source of water in the form of a spray to the inside of the second vessel; and

a tank for receiving and containing the substances dissolved into the sprayed water.

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